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A STUDY IN PRECOCITY AND PREMATURATION.

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I. DEFINITION OF THE TERM AND SCOPE OF THE STUDY.

Perhaps no word has been more persistently used in different senses than *precocity*. The applications have all, of course, something in common; that is, they all pertain in one way or another to an unduly rapid development of some plant or animal organism. But in significance, they are so dissimilar that a few fundamental distinctions must be made.

The general sense is that precocity means development in advance of some assumed norm. But as to what this norm should be, there is no agreement. Many who talk of precocity do not even realize that the assumption of some such norm is necessary. They vacillate between different constructions of the term as now one and now another standpoint is unconsciously assumed. Hence, all sorts of loose talk is indulged in, a variety of misunderstandings comes about, and the confusion reaches such a degree that two authors may verbally contradict each other in trying to say the same thing.

As it is not a purpose of this paper to coin any arbitrary definitions, the several uses may all be presented. Then with

the caution of keeping the distinctions in mind, we could continue to use the term as in general parlance, depending upon the context to give it more definite meaning. The chief of these usages may be illustrated as follows: *First*, when an Englishman writes that the children of the Negro race are precocious, he is evidently setting up his own race as a standard. The Negro child could just as well say of the English child that it is retarded in development. One statement means as much as the other. We simply have a disparity, which may be named from either end. *Second*, the comparison may be confined to the individuals of a single race, and then the mathematical average, or mean, may be taken to judge the precocity of any one. To illustrate, if more white boys reach puberty at 15 years than at any other age, we may reckon all the other boys of that race whose development is more rapid, as precocious. *Third*, the term may be used to designate an early development which is conceived to be aimless, or injurious, without considering whether it is natural to the individual or the race in question. According to this meaning, actual factors of growth and development are left out of consideration, and the individual is judged by some Utopian ideal. For example, any case of falling in love before a certain age, say 15, 16, or what not, is often called precocious, in utter disregard of the extreme probability that nothing could be more in harmony with nature. *Fourth*, we may assume as a norm an all-round development and regard every forward departure from this norm as an example of precocity. In this sense precocity may take as many directions as there are possible lines of physical and mental activity. This application is generally reserved for children like mathematical or musical prodigies. This use ignores the probability that there is not any *a priori*, rational all-roundedness, into which every individual can naturally be fitted; our machine methods and ready made curricula to the contrary, notwithstanding. What would be harmonious for one may be most inharmonious for another. *Fifth*, we may assume as a norm the natural rate of development for any particular individual, without regard either to the remainder of his race or to other races. Examining this standpoint, it seems possible that the natural rate is not the same for any two individuals. It is so with plants. Grains sowed simultaneously germinate successively. Some of the evening primroses used by De Vries in his experiments on mutation were noticed to reach maturity in one-half the time required by others, under conditions as nearly as possible identical. From this point of view, no difference if one individual develops to maturity in one-half of the time required by another, we would not call it precocious so long as the speed of its development is deter-

mined by the momentum of its own vitality. That is, the prodigy of encyclopædic learning at 10 years of age may conceivably be less precocious than the dullard of 20. It may require more pressure to place the latter on a low plane by 20 than to make a scholar of the former by 10. In short, precocity, in this sense, is simply a condition brought about by forced culture. It sets no external standard, but allows each individual to be a law unto himself. It has more to say of the *natural* and *unnatural* than of the *normal* and *abnormal.*

It is not to be decided here which of these view-points is the most fruitful. All of them are legitimate. It must simply be remembered that *precocity* is a blanket term, used in these fundamentally different ways. No difficulty need be met if the distinctions above made are kept in mind. That so much confusion should have arisen must be due to our proneness to accept words rather than meanings. It is so convincing to talk of the "normal" and "abnormal." It appeals to our instinctive dread of being unlike our fellows. To designate a quality or character as "abnormal" is, in the popular mind, to condemn it. Hence children of unusually rapid development have sometimes been called "monsters."

To summarize, we have, *first*, race disparities, and are therefore allowed to speak of race precocity. *Second*, we have natural disparity in the rate of development between individuals of the same race, and can therefore speak of individual precocity. *Third*, we have a totally different sort of thing which could perhaps better be denominated "prematuration," a state that results always from outside interference. In its wide range, it will include such facts as the following: pruning a tree to hasten its fruit, dieting an animal to bring it to early maturity; forcing on a child the activities of the adolescent and upon the adolescent the activities of the adult; the engrafting of mature civilization on to primitive races; of an idealistic religion upon a mind incapable of transcending the concrete; to initiate into the harmonies of Mozart, minds that find more edification in the rattle of tom-toms; in short, every conceivable example of forced culture.

A complete study would embrace all of the aspects mentioned. Natural precocity may help to expose the evil results of a forced precocity, or *vice versa*, and both may be necessary to bring best to light the advantages of a long period of plasticity. Likewise the precocity of the race and of the individual must be interpreted in the light of each other. A biological setting can be gotten by utilizing the hints gained from the literature concerning the forced culture of plants and lower animals. The present study, though originally intended to

cover the entire field, has been gradually narrowed to the subject of prematuration.[1]

A disclaimer should be inserted here. This study does not pretend to be scientific in the strict sense. It applies no exact methods, and possibly may establish no new fact beyond doubt. Confessedly, also, it presents only one side of the argument. It is hoped this will be kept in mind by those who are disposed to criticism. It is content, for the most part, to make suggestions. Indeed, the undeveloped state of child and race psychology would render dogmatism out of the question, for there is almost nothing in genetic psychology that is not germane to the subject of precocity. Genetic psychology would begin with the first cell and make an exposition of every fact in the process of development of the organism in its rise to maturity, through the period of activity, in the decline again to the inanimate. That is, the aim is to arrange the events in an order that is certainly chronological, in the hope that when this is done, the meanings will fall out, so to speak, automatically. If this conception is justifiable, then any scientific treatment of forced precocity must wait for a fuller development of genetic psychology. The nascent stages, to the extent that such exist, will first have to be marked out for every possible line of activity. It is manifestly impossible to say what is premature, until we first know when maturity should come. At present, the establishment of norms has hardly begun. Nevertheless it may still be profitable to bring together some of the facts already at hand in order to see, provisionally, whether they point to any particular educational doctrine.

II. The Meaning of Infancy.

The possibility of precocity presupposes the existence of a period of immaturity and incompleteness. The amœba, which begins its independent life as a perfect individual, is never subject to prematurity. Its environment is so simple that the mere

[1] Readers interested more especially in the biographical study of men of genius are referred to the studies by Sully, Genius and Precocity, Pop. Sci. Monthly, 1886; Carrière, De la Précocité Physique et Intellectuelle, Paris, 1900; and Duché, De la Précocité Intellectuelle, Etude sur le Génie, Paris, 1901. Other works bearing in part upon the subject are: George M. Beard, American Nervousness, N. Y., 1881 (see especially Chap. IV); Dr. Paul Moreau, Des Enfants Prodiges. Annales de Psychiatrie et d'Hypnologie, 1891; Andrew Lang, Genius in Children, North Am. Rev., Jan., 1897; Havelock Ellis, A Study of British Genius, Pop. Sci. Monthly, Vol. 58 (especially Chap. V). Lombroso, Galton, Donaldson, Scripture, Binet and Chamberlain have also touched the subject.

Those interested in the correlation of physical measurements with precocity are referred to the highly contradictory works of W. T. Porter, Dr. Boas, G. M. West, Prof. Gilbert, Dr. Hrdlicka, and others.

protoplasmic reflexes are sufficient to keep it in a living state. But as organisms differentiate and the world becomes filled with them, environment must be met which is more and more complex. And so there comes about the period of infancy whose utility was pointed out by John Fiske, and has been emphasized by Major Powell and a host of others. It is a period of growth and plasticity and has therefore been the making of man. Its length increases more or less proportionately as we ascend the animal scale. From the trematode worm, which exhibits three generations of embryos, one within the other, while the oldest is yet unborn, we ascend gradually to the anthropoid ape, in which infancy is already far developed. Their young are unable to walk, feed themselves, or grasp with precision for two or three months. Generally speaking, the rapidity of development is in inverse ratio to its height. As intelligence develops, maturity becomes more and more delayed, The law seems to hold with close approximation as far as mammals are concerned. The higher the mammal and the more complex its environment, the longer time it requires to get ready to lead an independent life.

The period of infancy is also closely related to the evolution of parental love, which has in this manner become an important element in the struggle for existence. Longer infancy and parental care take the place of excessive fertility and well developed offspring. One sees this in comparing fishes, reptiles, and mammals. Among birds, also, the fewest eggs are to be found in the best made nests. The young thus protected from the struggle for existence have time to develop a mechanism which in time will be able to cope with a complex environment.

It is interesting to compare the young of the quail with the young of the eagle. The former are a numerous progeny. They can run, utter alarms, feign death, and peck grain almost at the very moment of their escape from the shell. Throughout life, these instinctive activities will meet all requirements. Beyond a certain increase in the refinement and accuracy with which these activities are performed, their mental progress will be practically nothing. The eaglet, on the other hand, is long helpless. With his one or two mates he keeps the nest for many weeks and is not mature for 6 to 10 years. As a bird of prey he will have to fight numerous battles in which the degree to which he has acquired skill will be the determining factor. If, for a time, therefore, he is helpless and runs in debt to the world for his care, the mortgage he gives therefor is genuine. Like the Faust document, one can say that it is sealed in blood, for if he fails to make good the debt his life is forfeit.

"In the early history of birds, precocious young were no doubt the rule, and it is interesting to note that they are characteristic of many species in which the organization is relatively low."[1]

A comparison of the guinea pig and the white rat is no less instructive. The white rat at birth is about $\frac{1}{40}$ to $\frac{1}{50}$ of the weight of the adult; its eyes do not function for 16 or 17 days, nor its ears for 13 days; it is naked, ill developed, immature in form and musculature; its nervous system is completely unmedullated; its movements are slight and weak and it can make few co-ordinations for 4 or 5 days. Its activities are purely instinctive up to the 12th day, and it is not psychically mature till 23 to 27 days.[2] On the other hand, the guinea pig[3] at birth is relatively five times as large, as the white rat. That is to say, it is about $\frac{1}{10}$ of the weight of the adult. All its senses are perfect. It is thoroughly covered with fur, and its muscular development is complete except in the hind legs. Its instincts almost fully function at birth and the third day witnesses its complete psychical maturity.

Then comes the sequel, which may be stated in the words of Miss Allen.—"When the guinea pig has forced his way through a labyrinth, he has reached the end of his psychical powers. He cannot pull a latch nor push a bolt; he will not depress an inclined plane, chew a string, nor stamp his foot. . . . The experience of the white rat extends to strange combinations of wires and springs, and all the delightful surprises revealed by secret doors. But when the guinea pig has turned the proper number of corners, his dinner must be waiting for him or he does not get it. The white rat at three days is just learning to crawl, has never seen an object, and remembers nothing. The guinea pig at that age has triumphantly recalled a complex path, at the end of which he sits eating his well-deserved carrot. At 23 days the rat is lifting latches neatly and forming what Hobhouse calls 'practical judgments' as to the value of an inclined plane, in a situation at the centre of which is his food —a desired thing, an end. The guinea pig is still wearing out the floor of the same labyrinth." And, again, "the contrasting features in the two animals are their nervous systems. In the one a mature nervous system is accompanied by psychical maturity; in the other, neural immaturity permits great psychical development."

Coming to human beings, we find first a half dozen years of helplessness; then a series of physical and psychical perturbations

[1] J. R. Davis: The Nat. Hist. of Animals, Vol. VI, p. 473.
[2] John B. Watson: Experimental Study of the Psychical Development of White Rat, Chicago, 1903.
[3] Jessie Allen, J. of Comparative Neurology and Psychology, 1904.

which, as Pres. Hall has pointed out, suggest the landmarks of an old puberty at 6 or 7 years. Recovering from these, the child enjoys 7 or 8 years yet of prepubertal plasticity and growth. Even at puberty he is not mature, but generally in civilized countries enters upon a third period of grace, without which he cannot cope with the complex environment of modern life.

One finds similar facts in comparing the races of men. That is, in general, the rapidity of development is in inverse ratio to its final height and complexity. Scores of anthropologists have added their testimony to this fact. Havelock Ellis says[1] "Among primitive races in all parts af the world, the children at an early age are very precocious in intelligence;" and again, "the lower the race, the more marked is this precocity and its arrest at puberty. It is a fact that must be taken in connection with the peculiarly human character of youthful anthropoid apes and the more degraded morphological character of the adults." The Australian boy at 8 or 9 years of age[2] is able to care for himself and is left to shift alone. Christmann[3] says of the same race that they grow up so quickly as to be practically adults at 11 or 12 years. Taylor[4] says that the Polynesian boy is a half man at an age when our children enter school. Chamberlain[5] says that the Athka Aleut is an independent hunter at 10 and may marry; that the Tahiti boy at 8 is out from under parental control and at 10 or 12 knows as much as his father; and that the Khevsur boy speaks his word in public meetings at 8 or 10. Hrdlicka finds that, "the young of the Navaho, as among other Indians, are more advanced toward maturity, on the average, than whites of corresponding age." The same author finds, in his Anthropological Investigation of 1,000 white and Colored Children of both Sexes, that the average strength in each arm, as measured by the dynamometer, is not only greater for the colored children than for the white, but also greater when calculated in proportion to body weight. Teachers of mixed schools in the Northern States are continually surprised at the rapid school progress made by the negro child for the first few years, in many cases even outdoing his white competitors. But before long the tide turns and the negro child relapses into a state of chronic stupidity, while the white child pushes on to heights the former will never see.

With the lengthening of the period of infancy there is a concomitant increase of brain surface.[6] These elements are each

[1] Man and Woman. London, 1894, p. 177.
[2] Ploss: Das Kind, p. 334.
[3] Quoted by Ploss, *loc. cit.*
[4] Quoted by Ploss, p. 336.
[5] *Loc. cit.*, p. 53.
[6] *Vide*, John Fiske: Destiny of Man, Chap. on Infancy.

favorable to the other. The prolonged plasticity means simply prolonged teachableness; and this means that as training counts for more, heredity counts for less. The chick inherits next to everything, man little, in the way of definite reactions. Or to use the figure of Lloyd Morgan, the inheritance of the chick is parcelled out into definite sums, each of which, according to nature's will and testament, must be applied in a definite way: while that of man is a bank account, available for any kind of momentary emergency. For this advantage, the helplessness of a long continued infancy is the price. All systems of education may be viewed only as means devised to help us get the full value of our bargain; and if man would live for the future rather than for the present, his chief concern must be to see that the younger generation comes to its full inheritance,—in other words, that it reaches the fullest possible maturity.

This interpretation of infancy, however, is not even comparatively new. Comenius says: "In some children the natural capacities would fly before the sixth, fifth, or even the fourth year; and yet it will be beneficial rather to restrain than permit this. By acting otherwise, the parents who, on rare occasions, have a Doctor of Philosophy before the time, will often have a Bachelor of Arts and oftener a Fool. The vine, at first luxuriating too much and sending forth clusters thickly, will no doubt, grow to a great height, but its root will be deprived of vigor and nothing will be durable." Froebel likewise says: "How different could this be in every respect . . . . If parents were to consider the fact that the vigorous and complete development and cultivation of each succesive stage depends on the vigorous, complete, and characteristic development of each and all preceding stages of life! The boy has not become a boy, nor has the youth become a youth, by reaching a certain age, but only by having lived through childhood, and further on, through boyhood, true to the requirements of his mind, his feelings, and his body. . . . To see and respect in the child and the boy the germ and promise of the coming youth and man is very different from asking the child or boy to show himself a youth or man; to feel, to think, and to conduct himself as a youth or a man."

Rousseau's entire educational teaching centres in this one thought. For example: "We pity the state of infancy; we do not perceive that the race would have perished if it had not begun by being a child." "The most important rule is to lose time, not to gain it." "Every age and every station in life has a perfection, a maturity, all its own. We often hear of a full grown man; in contemplating a full grown child we shall find more novelty and perhaps no less pleasure." "A virtue prematurely taught sows the seed of a future vice."

But the principle has not yet worked the transformation in our attitude toward child life that an unreserved surrender to it would necessarily imply. From an examination of the educational practices of all the enlightened countries one finds much to support the belief that, like Descartes, many of our educators lamentably deplore the long years of childhood as a desert waste, to be crossed for the sake of what lies beyond, but in itself barren and worthless.

III. Education and Prematuration.

The schools of the leading civilized countries make for prematurity. To make such a charge, however, would seem to contradict the very essence of a school and its *raison d'etre.* For the school is supposed to have been organized for the one purpose of fitting for life by lengthening the apprenticeship to life's activities. Whereas the savage child is initiated into the rights and duties of citizenship at the early age of puberty and from that period stands on equal terms with the men and women of his race, civilized man denies his child this privilege for years to come. This means that we now regard life as something too momentous to plunge into precipitately, and that we consider it highly necessary to pause for a few brief years in order to get the bearings and to gather strength for the battle. It would seem, therefore, the peculiar purpose of the school to stand for the prolongation of human infancy.

On the contrary, from a look into many of our schools, one is forced to the view that we are guided by the exactly opposite principle; namely, that childhood is a necessary evil, that adulthood is the only perfect state, and that the chief business of the school is to make boys and girls into men and women by the shortest method possible. After looking about us to see what it would be well for the adult to know, how he should reason, what emotions he ought to feel and the actions that ought to follow from them, we proceed at once to drill the child in these ways of thinking, feeling, and doing. Forgetting or ignoring that the definition of education is not static, but changes constantly with the development of the child, we end by inverting the subject matter from its true order of presentation and employ methods unsuited to the stage of the pupil's development.

The evil effects of such training are set forth, in so far as they concern Nature Study, by Dr. Hodge.[1] There is room for a similar study in every branch of school work. The criticisms of Dr. Hodge, though aimed altogether against current methods of Nature Study, apply with almost equal force

[1] Foundations of Nature Study, *Ped. Sem.*, Vols. VI and VII.

everywhere. His conclusions are, in substance, as follows: "To make classifications an important part in elementary science is to put the cart before the horse." "Things must precede names." Book learning is the "knowledge that puffeth up." College professors continually prefer students who have not dabbled in the sciences. The one who comes with his book knowledge is "the *bête noire* of the college professor." His condition is that of "fatty degeneration of the soul." Such work breeds conceit, and "it is easier to make a competent investigator out of a dull than out of a conceited man." "Covering all the universe so beautifully" the ordinary Nature Study course puts the boy in the condition of "a cucumber that has turned yellow before the blossom opens." It "sickles the child o'er with the pale cast of adult 'proper conclusions,'" marks the "closing in upon him of the shades of the prison house," and brings it about that "very few ever grow into the fullest realization of the possibilities of their infancy."

Burk[1] has shown the absurdity of the current methods of teaching drawing to children. He finds, without exception, that all text books of drawing put out in the United States previous to 1902, were based on the logical order, ignoring thereby every law of child development. Overlooking the fact that motor imagery plays a greater part in the child's mentality than does visual, the child is put to artistic work the performance of which presupposes the segregation of visual control and its complete influence over the movements, when in point of fact such control is impossible. Accuracy and precision are required when they have no rightful place. Problems of perspective are given before the child can appreciate what perspective is. The school curriculum attempts to answer the question *how*, long before the child asks or cares to know. His interests as regards subject matter for drawing are also whipped into submission. While interested in such matters as the human figure, he is put to constructing geometrical designs, which forces his interests by several years at least.

Everywhere we turn the same situation confronts us. We refuse to be guided by the healthy instincts of the child. In the words of President Hall, "We push the rational to the detriment of the intuitional." Instead of trying to find out what is indigenous to the human soul and how we could best build upon this, we rather consider it a blank page upon which to inscribe adult "proper conclusions." Forgetting that the child's thinking can only be spontaneous, flitting, and illogical, we try to force it into the paths of formality and logical order.

[1] The Genetic Versus the Logical Order in Drawing, *Ped. Sem.*, 1902.

"Youth and childhood are subordinated as means to maturity. We teach results without the methods by which the results were obtained. We develop the sense of possession without the strain of activity. We give extensive knowledge at the cost of intensive. And nothing is better suited to create the blasé type. As all beginnings are easy, and difficulties increase geometrically, the will can only be trained by sustained work in a few lines." [1]

It is widely attested that the precocious culture of rationality weakens the tendency to activity. Numerous studies in experimental psychology point to the conclusion that the effect of mental work is psycho-motor inhibition, while on the other hand the effect of physical work is psycho-motor excitation.[2]

Janet finds that the psychasthenics are as a class strikingly intellectual. They are ready of speech and are not deficient in understanding. But they will not act. Their conduct when about to begin anything is best described by the homely term "finnicky." They demand a thousand impossible conditions to be met before they will move. Corresponding with this, they are somewhat lacking in their sense of the real, a state that tends to result from an over-rational training.

Such children are likely to become nervous, excitable and to fear effort. With unlimited desires they yet withdraw from the struggle through intellectual fatigue, become apathetic and pessimistic; a suggestion to be taken in connection with the alarming increase of child suicide and juvenile criminality in all civilized countries.

It is well known that manhood and womanhood normally bring a certain amount of disillusionment. The real world as the adult finds it never measures up to the fairy world which the child has looked forward to. The confident ambitions of youth are not realized in their fullness. Most men and women, however, accept the situation philosophically when it finally presents itself. They find a modest station in life and make the best of the opportunities that come. But if, through the prematuring effects of a wrong education, the disillusionment comes too early, before the will has developed and while the passions are still explosive, we have the prime conditions for making the youthful suicide or criminal on one hand, or the cynic and pessimist on the other. It is a common remark that one finds among German university students an air of pessimism. The usual explanation is that it involves nothing more than a fashion which comes largely from the popular influence of Germany's great pessimistic philosophers. There is the

[1] See Hall: Moral Ed. and Will Training, *Ped. Sem.*, Vol. II, p. 87.

[2] *Vide* Karl Miesener: Ueber psychische Wirkungen körperlicher u. geistiger Arbeit. Psycholog. Arbeiten, Vol. IV, p. 375.

possibility, however, that all this is symptomatic of a more serious ailment. There can be no doubt that the German boy is hurried to an early maturity. At 18 or 19 years he stands before the world almost the equal in scholarship of our college graduate of 22. On the other hand he has seen less of the world and has been kept continually under the close surveillance of class-room drill. At this time he is ushered into the "Lernfreiheit" of the university, which demands a degree of judgment and self-control which his previous education has not fostered. His *morale* will not support with sanity and balance the new world-views which he has so suddenly come upon. There naturally results a certain looseness of character generally characterized by an attitude of cynicism and pessimism. No pessimism is agreeable. That, however, which grows up as a settled philosophical conviction can be understood and even sympathized with. But the precocious pessimist is an anomaly in the world, and in some cases, at least, he is a product of educational prematuration.

IV. Over-pressure.

Closely connected with this forced culture are the omnipresent symptoms of over-pressure, a condition better defined by the French word "le surmenage." The term is taken from its application to beasts of burden, and expresses the full situation better than any English equivalent.

The charge of over-pressure is an old one. Plutarch even in his day complains that children are over-burdened at school and lose all desire for healthful sports. Mantaigne complains that children are kept 14 or 15 hours in the "hell of work." Hufeland complains of its causing a precocious nervous development leading to weakness. For the last century the question is one of the most important in German education. The sciences are developing and demanding more and more space in the curriculum. Meanwhile the classics refuse to be displaced. It is the old struggle between Humanism and Realism, and the child is given over in sacrifice in order that both may be placated. The situation is most critical in Germany, but is growing in importance in the United States.

The evil effects of forcing are not noticed so much in children of unusually strong nervous endowment. It is the children who already have a heavy burden of hereditary neuroses that suffer most. Bodily functions that are already weak are dangerously undermined by the high pressure of the average school. The resulting nervousness shows itself in innumerable ways. Krafft-Ebing blames the long study hours for a large part of the mental strain, paleness, dull eyes, myopia, dizziness, and headache of school-children. He

thinks the dull boy is injured no less than the bright one, for if he belongs to the higher classes he is pushed, crowded, and tutored privately till he finally becomes either a nervous wreck or a helpless graduate.

We have already seen that chronic fatigue has been cited as a predisposing factor in juvenile criminality. Several of the alienists, notably Dr. Christian, thinks it is an important element in causing dementia præcox. Out of 100 cases studied by Christian, 22 had given unusual promise of mental ability. Morel also states that most of his patients were unusually bright in their school work. Over-pressure at least seems exactly suited to bring out slight hereditary defects of the nervous system. W. S. Monroe, from an extensive investigation of chorea among school children comes to the conclusion that it is very often the result of premature promotion in the grades, over-work, and worry about the school tasks. Dr. Weir Mitchell shows that outbreaks of chorea are more common and more severe among school children during periods of formal examinations than at any other time.

Strümpell says: "An education which neglects the strengthening of the will, which excites to an extraordinary degree the imagination of the child, which over-burdens the mind and brings about a premature psychical development, is too often the cause of the weak and excitable conditions of the nervous system which give rise to hysteria."

Szejko[1] shows that overpressure in the schools plays a part in many cases of acquired neurasthenia. He thinks the danger of neurasthenia is especially great with precocious children. They are serious beyond their years, interested in everything that feeds the intelligence. They reason, reflect, and observe like adults. They are all the time trying to solve problems that present themselves to their active brains. This intellectual and moral tension is strongly accentuated at puberty and the subject may pass over into a state of neurasthenia. M. Bouveret thinks it is one of the chief signs of hereditary neurasthenia for a child to show precocious mental development. This recalls the saying of Scholz to the effect that those pupils at the head of their classes are not the promising ones, but would better be denominated "Angstkinder." Ludwig Cernej[2] thinks that precocity is usually pathological and that early instruction is the worst thing that can be done for it, for, as he says, it is the precocious child who incurs the greatest danger of over-pressure. Ziller says that excitability of the nervous

[1] Influence of Education on Development of Neurasthenia, Lyon, 1902.

[2] Frühreife u. Entartung, Kinderfehler, 1901, p. 129.

system, need of artificial stimulation, lack of pleasure in life and activity are often connected with premature work and growth in our public schools. Fuchs thinks that acquired states of subnormal mentality are often due to school over-pressure. Micolaoj[1] regrets that while the child should be resplendent with life it is only a small fatigued adult. "*Son esprit est lassé, son cœur est desséché, son âme rétrécie, . . . mais il est breveté.*"

These suggestions give a slight basis to the old saying that "Kluge Kinder sterben früh," or "Whom the god's love die young." That is, nervousness and precocity are frequent companions, and the over-stimulation of the nervous constitution will, in many cases, cause it to succumb to disease. Escaping this fate, the precocious child may fall into neurasthenia or chronic dullness. Hebel tells of a 9 year old boy who was able as a small child to explain the principle of the steam engine, who was made a "Paradepferd" on account of it, but who in later life learned little else. Cramer tells of a 28 year old dullard who as a child had asked: "Which do you prefer, Schiller's *Räuber*, or Goethe's *Götz von Berlichingen?*"

It will be objected to these, that individual examples prove nothing, and that the very fact of the precocious mental development of a majority of geniuses makes it absurd to take precocity in the bad sense and then cry out against the evils of precocity in general. It is true that we must distinguish the precocity of real genius from the spurious precocity that goes with nervous unbalance. The former kind is most likely prophetic of true greatness, while the latter is only a will-o-the-wisp. The former can digest a rich educational diet and be the stronger for it. The latter stands rather in need of medical care than educational. Their nervous hyperæsthesia and instability is sadly aggravated by over-pressure until the case ends in chorea, hysteria, neurasthenia, dementia præcox, or in some cases criminality or suicide. Their condition reminds one of a straw fire, giving great promise, but going out with greater rapidity when blown into. Between these two sorts of precocity the teacher and parent must be careful to discriminate. Brightness in itself is not an unfavorable symptom in a child, but all morbid manifestations accompanying it should be viewed with suspicion. It is in this kind of subjects that the evil effects of over-pressure are most often seen.

The number of such cases is no doubt far greater than most teachers realize. We always tend quickly to lose sight of those who fall by the way. As teachers, we remember rather the few who remain with us and complete the courses. If we are satis-

[1] Les Enfants mal élevés, p. 422-425.

fied with these, we take little thought for those whom our methods have destroyed.

It is the erroneous view of the purpose of childhood and youth that lies at the basis of the greatest number of educational sins. All agree that this extended period must be utilized in some sort of preparation for life. The difference comes when we consider whether it is best to leave the child to grow up by natural means and in the paths of natural interests, or on the other hand to cram him lustily with the knowledge that adults are supposed to stand in need of. The latter view has had undue influence in shaping our educational policies. We need to bathe ourselves once more in the wisdom of Rousseau's *Emile*. As President Hall has said, "Every encroachment upon the liberties of the child has a certain presumption against it, and the only justification lies in the necessity." Some concession must, of course, be made. The environment is ever increasing in complexity and it is necessary that the child cultivate some sort of rational *rapport* with it. Every concession, however, should be made with reluctance. The words of Sikorsky might well be taken as the teacher's motto: "Life does not demand of youth any deeds, but leaves it to develop, to ripen, to extend its horizon, to organize its soul, and to build life-programmes. Youth is entirely in the future, it lives upon hope."

V. Criminal Precocity.

Notwithstanding the extreme difficulty of gathering reliable statistics of juvenile criminality and the far greater difficulty of interpreting them, the criminologists nevertheless assure us that the precocity of crime is on the increase in most parts of Europe and America. The array of evidence is endless and complicated and can be dealt with properly only by one trained in criminal statistics. The increase in criminal precocity, however, seems to be true for Italy, France, Russia, Germany, England, and the United States. It holds for the ordinary crimes, for prostitution and for suicide. It appears also more largely true of the city than of the country. Worst of all, the tendency seems to be in no wise lessened by the diffusion of school instruction. We may provisionally accept these momentous conclusions as warranted. What is their significance?

At least three suppositions are possible to account for it. *First*, increase in criminal precocity may mean that the criminal born reach naturally an earlier maturity than formerly. *Second*, if we grant with Ferri that criminal precocity is almost an invariable mark of the criminal born, then we now have more born criminals than ever before. Or, *third*, that modern

environment is becoming more and more suited to draw out and exaggerate the criminal propensities which, as Lombroso and others have emphasized, are normal to childhood and youth; or rather, we may say, less suited to keep these in abeyance. I know of no serious evidence in support of either of the first two propositions. For the third there is much evidence, though in the nature of the case it cannot be marshalled so as to constitute scientific proof.

Joly emphasizes the following points: That crime is more precocious in cities and, in general, varies with the density of the population; that the desertion of rural homes for life in congested cities, especially by young men and women, exposes them to the very temptations which at that age they are least able to withstand, and is likely to result in a break up of former moral habits; that the modern system of gratuitous public education displaces the apprenticeship system of industrial training and gives no valid substitute; that heredity counts for little, that abandonment and lack of wholesome family life are important causes in the city; and finally, that by turning the child's attention from nature to worldly affairs our civilization hastens maturity; that it gives a precocity in prattling, smartness, and vice but not in real intellect or strength of will.

Proal also lays stress on the effects of city life, where, as he says, "virtue retires and vice is flagrant." In addition, he believes that theatres, nude art, and bad literature play an important part in the increase of criminal precocity. He warns against encouraging the child to cultivate interests in adult affairs before the development of his will permits him properly to pursue these interests.

Corré dwells at length on the extent of juvenile criminality and the causes that favor it. He speaks mostly for France, but the conditions he emphasizes are general. He thinks the increase is even greater than the criminal statistics indicate. He gives it as his opinion that if we could be suddenly enlightened by a complete and true picture of the extent to which the young are imbued with anti-social ideas, we would stand aghast. He states that certain districts of Paris are continually terrorized by criminals who are mere boys. These have their mistresses who are partners in their crimes. They fight their duels, in which other boys act as seconds. Corré finds crime greatest at the age of greatest physiological and social activity. Anything, therefore, that hastens the latter will hasten the former. Girls, for example, are less criminal than boys, but the criminality they do possess shows itself about two years earlier, in harmony with their earlier physiological and social maturity. We shall see later how city life and other cir-

cumstances seem to hasten puberty. The argument is that these same influences are making criminality more precocious.

Corré shows that low forms of literature have a circulation among the young of France that is appalling. Many of these are filled with revolting pictorial illustrations. What the younger boys cannot understand the older ones explain. A large proportion of the suicides, murders and rapes committed are carried out in a spectacular manner plainly suggested by their reading. Corré pleads for the suppression of such literature. It may here be mentioned that 26 periodicals legally circulating in the United States are excluded from Canada.[1]

But, more than anywhere else, Corré believes, that the worst trouble lies in the kind of education now given the young. His thesis is that ignorance *per se*, does not make for criminality, nor instruction for morality. He shows how juvenile criminality has enormously increased during the very period of most universal gratuitous education. He does not blame education in itself, but believes that we have *instructed* our children rather than *educated* them. Intellectual education is at best a vaccination against crime that often fails to take; while proper volitional and emotional education acts as a system of hygiene, changing the entire being to the marrow. The very regions of France that have the most schools and the best attendance are also the ones that show most alarming increase of juvenile criminality. Instruction, so far from being a barrier against crime, may even appear as one of its factors. Quetelet long ago declared that instruction which consists only in learning to read and write becomes for the most part only a new instrument for crime.

Corré arraigns French civilization as encouraging vanity of every sort. Girls are taught airs and elegancies. They do not prize virtue, and marry men who revel in adultery. Boys are, by example if not otherwise, taught dissimulation and selfish calculation. Success is vaunted before the young with no regard to how it has been obtained. Work is looked upon as a means of getting money and of putting one's self in position to make others envious. On every side less attention goes to content than to covering.

In no field of crime is the growing precocity more marked than in suicide. It would seem to be one of the strongest indictments against the prematuring effects of modern education as carried on by the leading nations, that what should be a period of veritable intoxication from the overflow of joyous animal spirits, is frequently burdened with sorrows so keenly felt that relief is purchased by suicide. In France, according

[1] Hall: Adolescence.

to Friederich, the suicides of minors doubled from 1874 to 1878, and from 1881 to 1895 the increase was 50%. In Saxony, from 1870 to 1875, 24 boys and 2 girls suicided, while in the five succeeding years there were 50 boys and 10 girls. In Austria, while suicides for men were increasing 20% and for women 11%, the increase for adolescents between 15 and 20 years was 40%, and for children under 15 the increase was 60%. Manheimer finds that it is worse in large cities, that it increases with the spread of intellectual culture and with the growing organization of public schools. He therefore imputes the result largely to overwork and to the fact that education is almost exclusively intellectual. Friederich holds that it is in part due to the premature awakening of the sexual instincts.

It must be admitted that there is evidently no way to find out all the factors in juvenile criminality and suicide nor to tabulate just how much each factor contributes. It does seem unnecessary, however, to seek for causes beyond environmental influence to account for the *increase* in precocity. Heredity will account for it only on the supposition that the civilized races are becoming neuropathic and generally degenerate. Looking for recent notable changes in environment a few chief facts arrest the attention. First, the great industrial evolution of the last century, so much emphasized by the socialists, has worked far-reaching results. Population has become more and more congested in large cities, where imitation has greatest scope and where is more likely to be seen that part of man's nature least worthy of imitation. The farm with its scores of rudimentary and primitive industries affording unexcelled advantages for the encouragement of mental balance, is being rapidly deserted for the office, shop, and factory. Home life becomes less wholesome, and temptations are vastly increased. Instead of living to work, the person daily goes mechanically through eight hours of monotonous labor in order to receive on Saturday an envelope with a stated number of dollars. There can be no doubt that the lack of interest engendered by such a system makes for a duality between one's life and one's work that cannot be bridged, and that may go far toward undermining whatever moral qualities are not most firmly established.

Simultaneously with these industrial changes have occurred equally important transformations in the educational world. Instruction has become universal and gratuitous. We seem to think, as Sir Walter Raleigh said of the ax, that it cures all the ills of life. Heroic effort is made to boost every child just as near to the top of the intellectual ladder as possible and to do so in the shortest possible time. Meanwhile, the child's own instincts and emotions, on which alone all volition is based, are

allowed to wither away. No adjustment of clock wheels, however complicated and delicate, can avail if the mainspring is wrongly attached or altogether missing. We forget that activity is not based upon intellect. The latter, as President Hall emphasizes, is an upstart, a parvenu, without much influence even in our human mentality. Instinct preceded it by ages. In man its over-emphasis is a recent phenomenon. Primitive man is swayed by passions that are as foreign to us as the strains of Beethoven to the deaf. Languages still show the marks of their emotional origin but are now becoming prostituted to the requirements of exact science. We analyze life rather than live it.

In our present environment this emphasis of intellect may be to an extent unavoidable. But granting that, we can at least avoid prematurely forcing the young into the same condition. School work is begun too early and does not educate the child as a whole. If the boy only amasses the prescribed amount of knowledge, and if the girl only glosses herself over with a little music, art and literature, little heed is paid to the rest.

The foundations of character must be laid broad and deep in those qualities that are indigenous. The intellect should cap the pyramid instead of rendering it top-heavy. To build up the intellect at the expense of the rest of mentality robs it of every element that ennobles it. It becomes mechanical and has no life blood behind it. It does not suffice to make the child see, and know, and calculate good and evil passively. In that case he is likely to stand where ought to be the hot battle line between good and evil, with no emotions ruffled. Good and evil will be objective things but no longer subjective. There is no better example of forced culture than the teaching of the standard and barren problems of formalistic ethics in our normal schools and colleges. To have a pet theory of the nature of abstract goodness does not enable us to evaluate concrete activities, which after all are the only kind we ever have to choose between. Better than empty work of that kind would be such subject matter as concrete problems in sociology. This or something similar ought to form a long apprenticeship to the study of ethics. To teach form before content and to the exclusion of content, breeds conceit, laziness and the related vices.

The above are only a few illustrations of many plausible indictments that could be made. Statistics of juvenile criminality show that we have not made boys and girls better by instructing them. We were foolish ever to have hoped for such a result. If we would control action we must go to the source of action. It is probable that by over instruction we have directly contributed to the result we would avoid.

Moreover, educated crime has a taint that primitive crime does not have. The latter has a certain naïveté that makes it less repulsive. The crimes of the savage are more bungling and easily detected. He cannot live with respect among his fellows. We have made the intellect able to refine the methods of crime to such a degree that already it has become impossible to detect half the criminal acts that are performed. It is not claimed that the remedy lies in a deliberate return to ignorance; yet not more will it be found in mere instruction.

VI. Religious Precocity.

It is strange that so little attention has been given to finding out what are the actual religious needs of children. The average person of most countries expends a large portion of his energies upon religious institutions. Sunday schools are conducted for children at considerable cost. In various shapes and forms this activity dates back as far as history itself.

It would seem, therefore, after so much trying on, that we ought now to have succeeded in fitting with infinite nicety religious and moral instruction to the native capacities of the child. Nothing could be farther from the truth. The ocean of child-study material put forth in the last twenty years has hardly more than touched the subject. Several well trained men are needed to devote themselves to the research. They should be anthropologists, and physiologists as well as psychologists. They must establish norms of religious growth. They must search out the religious interests that are spontaneous. Only by the greatest care will it be possible to separate these from such as are grafted by religious environment. The environmental differences to be considered are not only those within a given religion, but those among all religions. At present, no one, except in the most general terms, can say when and how religious instruction ought to begin.

Anthropology presents both extremes. Some savage tribes give little or no religious education to the children. But leaving out of account other religions than our own, the practice most common is to begin in the earliest years, before it is even hoped that the child understands what is told him. He is told about God and angels before he cares to hear of them or can comprehend even the rudiments of the information imparted. Overheard whisperings about death implant in him a terrible fear of his own possible death and of his relatives'. He could be kept in ignorance at least a few years longer. Worst of all, he is likely to be informed that a hell of fire is waiting to consume those who have led sinful lives. He may thereby suffer the most intense mental anguish for years when he ought not even to know that such a thing as sin exists, or if it does, that

it involves anything more serious than the temporary loss of a mother's love and the refusal of her good night embrace. He is asked to surrender himself to the story of the cross, before the altruistic feelings have been born which alone will enable him to comprehend the appeal and to respond to it.

On the other hand, one is at a loss if asked to lay down concrete dates at which particular religious training ought to begin. In the present state of affairs the criticism must be largely negative. There is probably anyway more danger of giving too much than not enough. For several years the child is by nature non-religious. Unless by birth a moral degenerate he asks no further incentive to good behaviour than the wishes of his parents. The highest interest of his life, if he has been well trained, is to stand well in their sight. He asks no more authoritative call to duty than their command, and needs no keener rebuke than their disapprobation. It is likely that for eight or nine years the child need not, and therefore ought not, to know anything about right and wrong. His one habit and the very gospel of his life should be obedience. To reason overmuch with him perverts him. As Rousseau says, there is nothing more stupid than a child who has been reasoned with.

We must explore the child's natural interests and take our cue from them. Until the awakening of altruism it will be useless to try to force upon his comprehension a religion whose keynote is love and sympathy. The child is, and ought to be, an egoist. He can be nothing else until he has roughly but rationally evaluated himself as set over against other individuals. But healthy children are not interested in the subjective. They live in an objective world. They have not learned to oppose the world and self. They are not capable of the self examination and self criticism which is necessary to the consciousness of sin. A heightened self-consciousness in childhood is morbid. It is very likely to accompany nervous instability and is common among children who have been prematurely trained religiously. The morbidity may show itself in a thousand ways. Exaggerated scruples, puerile fears, insomnia, onanism and abnormal erotic desires are frequent accompaniments. There is often an unnatural and insatiable curiosity about matters pertaining to God, heaven, hell, angels, death, spirits, etc.

Nagaty[1] has shown how the morbidity may reach such a stage, even in children, as properly to be termed religious insanity, of which he finds many cases before adolescence. Even adolescent cases show often a morbidity reaching back into early childhood. Nagaty describes two cases at length. One

[1] La Folie Religieuse, Paris, 1886.

of these, a girl, had been subject to religious sentiments from earliest childhood. At 5½ years she consecrated herself to Jesus. At 6 she was disgusted with worldly affairs. Before long erotic ideas and religious hallucinations began. Another case, also a girl, had been accustomed as a child to practice maceration and to spend whole nights in prayer. Nagaty finds most of his subjects in homes that are distinguished by an excessively religious atmosphere. It is also noteworthy that he thinks religious morbidity more common among Protestant than among Catholic children. This, if true, must be viewed in connection with the exaggerated emphasis placed by Protestant denominations upon conversion. It is arbitrarily made a dividing line between the "saved" and the "unsaved." Certain unessential elements are unduly dwelt upon. If these are not experienced the conversion is not regarded as genuine. The child is precociously led into a search for the experiences of conversion as the only assurance of escape from a punishment, which perhaps more than any other that could be threatened, is suited to terrify his imagination.

The holding of children's revivals has even become a specialty to which some ministers devote most of their time. The most noted of modern children's revivalists, no doubt, is Edward Payson Hammond. His books are a full account of his work and methods.[1]

For 31 years or longer he worked actively in the United States, England, and Scotland. He preached in some of the most noted pulpits. His meetings were invariably attended by large crowds, a considerable portion of whom were children. He preaches the doctrine of innate depravity in its totality. He dwells on the so-called change of heart, feeling of salvation, sense of sin, etc. He enumerates five essential and stereotyped marks of conversion. They are, love for God's people, love of the Bible, desire for prayer, love of the Saviour, and a desire to see others converted. Every would-be convert is compelled to stand the fire of cross-questioning on every point in this list. Rev. Hammond piously assures us that thousands of children from four to six years of age have given him satisfactory evidence of all these. He sets no age limit whatever, mentioning a few converts between two and three years old. He thinks a majority may profitably be converted by the age of eight or ten. The extent to which such work is carried on, and the sanction bestowed on it from high quarters, make it impossible to consider the matter lightly, or to regard the danger of religious precocity as a spurious one.

[1] The Conversion of Children, 1877, pp. 174, and Early Conversions, 1901, pp. 224.

Moreover, by insistence upon dogma, the period of adolescent doubt is brought on prematurely. The child readily accepts mythologies of whatever sort. He has not yet learned and does not care to separate the real from the unreal. If not interfered with he will naturally make the separation in due time. If the transition is allowed to come gradually and without violence, he will not suffer from it. It is not completed until a stage of development is reached assuring a calm balance of reason. Under the present conditions the natural sequence of events is too often not allowed. Because of the church's insistence on doctrinal points, the child is compelled to listen to arguments for and against their validity. His attention, therefore, is precociously called to the rational phase of religion. Whether he decides for or against the traditional orthodoxy, it is almost certain that his opinion will lack breadth of view. He will be led either to unreasoning dogmatism or to atheism and the cynical attitude toward all religions. The latter fault is more likely to be corrected than the former. Thus, by insistence upon the letter rather than the spirit, the break from the myth-lore of childhood, which ought to be a gradual and natural process of disillusionment, is likely to be made into a cataclysm from the shock of which the individual will not soon recover.

VII. Precocity and Unbalance.

All writers on the precocity of genius note the extreme frequency with which it appears in particular lines only, while in other respects there is no unusual promise. This must not be taken as a necessary corollary to the fact that adult geniuses are universally more or less one-sided. The latter is unavoidable. It is due rather to mechanical pressure from without, such as the shortness of human life and the finiteness of human comprehension. It is admitted also that one-sidedness in mental development early shows itself spontaneously in some cases. Krafft-Ebing[1] notes that children of nervous parents are very likely to show a one-sided brightness.[2] Ziller thinks that precocity almost always rests on unbalance, and Emminghaus[3] even gives as the definition of precocity a lack of mental equilibrium. The mathematical prodigies as a class are notoriously partial in their ability. Musical and theatrical prodigies also usually show partial development, their precocity being mostly emotional.

Granting, however, that unbalance is once in a while spontaneous and prophetic of more or less genius, it is not evident

[1] Ueber Nervosität, Graz, 1884.
[2] Grundlage zur Lehre vom erziehlishen Untrr., p. 477.
[3] Die Psychichen Störungen des Kindesalters, p. 9-10.

that the condition is one to be encouraged. The narrowing of interests and talent, even in adult life, to the close confines of a small department of one profession is rather an event to be deplored and to be postponed as long as possible. As Fuchs, Clouston, Krafft-Ebing, Ziller, Emminghaus, Baur, and Moreau de Tours have urged, teachers and parents should stand guard against every narrowing tendency. The child, as the epitome of the race, ought to represent in miniature the sum total of all human endeavor and aspirations. But if he shows unusual talent in one particular direction and is made into a parade horse on account of it, there is danger of developing a morbid conceit that will tinge the whole life. This seems to have been the result with most famous calculators. It is also true of several musical prodigies, of whom Mozart is a conspicuous example. In some cases the child who could have been fitted for a quiet and useful life in a moderate station is "staged" on account of some insignificant gift of nature, as for instance ability to perform feats of calculation or memory, with the result that all other interests atrophy, the personality dies out, the emotions are dried up, and nothing remains but a frightfully distorted remnant. Under this kind of treatment even the rudiments of common sense sometimes seem to disappear, leaving the subject practically an idiot in all respects except his particular gift. We must distinguish between the true *idiots savants* and those who are made such by foolish parents and teachers.

VIII. Precocity and Nervousness.

It is true that a large portion of the noted men of history gave precocious promise of their future greatness. It is also true that a large portion of these showed nothing abnormal or neuropathic in their development. On the other hand a few geniuses, as children were notoriously morbid. Moreover, of the vast numbers of precocious children who do not later become famous, perhaps most are of the nervously morbid type. It is possible, as Lombroso and his followers have emphasized, that their nervous endowment is similar to that of the real geniuses, only of slightly greater instability; that is, that nervousness and genius have a common basis in an exaggerated organic activity and nervous instability. If this condition is accentuated, lesions causing insanity or death are liable.

Types of morbid precocity have been described at length by several authors. Trüper[1] for example, says in substance: Among the nervously excitable there is no lack of apparently precocious intelligence. It is not real, however, but due only

[1]Minor mental abnormalities in children, Child Study Monthly, 1898.

to a fantastic and excitable imagination. They interrupt with all sorts of wise questions. They are restless as butterflies, are peevish and stubborn. They are parrot-like in their mode of learning. They are likely to show volitional defects. Commonly they are well gifted in language, and in general interested in words rather than things. The weakness lurks in concealment and only comes to light when the pupil is overloaded with subject matter of instruction. The matter is complicated by the foolish pride of parents. Worst of all, the teacher accepts these qualities as symptoms of genius in language, philosophy, etc., and is likely to encourage the pupil to continue his interest in book knowledge and formal instruction rather than adopt the far more sane method of restoring balance by the study of concrete things and by feeding the sense of reality.

Meyer[1] gives a similar description of the morbidly precocious: They are prematurely and one-sidedly conscientious, and often of exalted religious and moral standards. Precocious sexual development and grossly immoral sexual practices may accompany. They have a furor for abstract matters. They shun companions of their own age and cling to those who are older and can better feed their insatiable curiosity. They are irritable, erotic, whimsical and hypersensitive. They have headaches, freaky appetite and general malaise. They are egotistical, subject to fantastic day dreaming, and become too good for the world. They have little sociability, care little for games, and take more interest in words, books, and remote philosophical matters than in actual experience.

Féré, speaking of this type says: "One ray of the sun enlivens them, a cloud dulls them, an electric state of the atmosphere torments and overpowers them." He adds also that this ultra impressionability, is one of the first consequences of a morbid heredity. Mozart as a child was thrown into convulsions at the mere sound of a trumpet. His heightened self-consciousness was no less morbid. Many times a day he would ask those around him if they loved him. A negative answer much affected him. His extremely mobile physiognomy was never at rest and expressed incessantly either pleasure or pain. Clouston instances a boy of 7 years who was abnormally sensitive to specific sense stimuli, loud sounds and strong lights almost causing convulsions. Then he became hyperæsthesic morally and was haunted by the usual puerile fears of wrong-doing. After extended over-culture and after being put to a highly stimulating employment he developed adolescent insanity at 17.

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[1] *Amer. Jour. of Psychology*, Oct., 1903.

Fuchs[1] accounts for a large part of the apparent brightness shown by children of unusual curiosity simply as an over-irritability of intellect and emotions. He thinks the question mania in its extreme form is not common to the healthy child. He marks how in one of his subjects during fits of it, the entire body shows the excitement. Speech is hesitating and stuttering, the arms jerk, and the legs make dancing movements. The more rapid and unhesitating the fire of questions, the more the bodily excitement increases.

Another boy cited by Fuchs has a precocious and hypertrophied sense of honor. The slightest joke or remark that touches his ego is resented with blows or oaths. He cannot rest till his honor is vindicated. Fuchs believes that such hypersensibility lies at the root of many child suicides. The false and heightened consciousness of self makes the subject always feel himself injured, and the result is a continual state of morbid suspicion, or in some cases criminal acts or suicide.

Torquato Tasso is the classic example of this type of morbid suspicion. It seems to have been true of his real life as well as his personality as depicted by Goethe in the drama by that name. Tasso's peculiarly neuropathic nature has made him a favorite subject of study for mental pathologists.[2] His life illustrates almost every phase of precocity and its connection with nervousness and melancholia. As a child he was extraordinarily precocious. His friend and biographer quotes an old nurse to the effect that he uttered some words when only six months old. From earliest childhood he showed an amount of sense and gravity beyond his years. The Fathers at his school made him take his first communion when scarcely 9, though both mind and body were at that time so mature that he might have been judged 12 at least. He was also sexually precocious. His mother dying early, the boy shared all the vicissitudes of his father's life—"a mixture of gratified vanity and humiliation, pride and dependence, poverty in sight of grandeur." With his precocious intellect and keen sensibilities, these distresses imbued him with a tinge of melancholy which followed him to the grave. The anxiety which his mother suffered before his birth and the griefs of childhood helped the development of his mental derangement. That he was of nervous constitution is also indicated by his stuttering. His exaggerated scruples were shown by his habit of troubling his friends with letters asking whether he had offended them, and by his suffering from fancied religious doubts. His vanity was so overfed by praise and honor in his early life that he owns he "could

[1] Beiträge zur Pädagogische pathologie, p. 57 ff.
[2] *Vide* Ireland: Alienists and Neurologist, 1891.

not live in a city where all the nobility did not either yield him first place or at least content themselves with a perfect equality in all exterior marks of honor." Later in life he developed his characteristic delusions of persecution, which, in varying intensity, remained with him through life and which have given rise to so much interesting controversy among his biographers.

Such characters are also frequently distinguished by excessive timidity. The timidity shows itself not only in excessive and insane fears, but in a kind of paralysis of the volitional powers; a devotion to the contemplative rather than the active side of life. At the same time the ambitions grow lofty in proportion as the inclination to try to realize them disappears. Conceit and pride in their ability to perform great deeds are inversely proportional to the likelihood of their accomplishing anything. The childhood of Cowper was rendered miserable by the depression caused by his acuteness of feeling and his timidity.

Mozart, Tasso, Cowper—these are only a few of many famous examples which could be given of precocity in connection with various neuropathic conditions. Marie Bashkirtseff should also be mentioned, for her Journal is a veritable text book on precocity. Under the best of conditions such constitutions are plentiful enough. The important question is whether the environment we furnish is the most suitable it might be for carrying such persons over the critical period of their development. The alienists and the students of children's defects and abnormalities are almost unanimous in the negative. They point out how, from the first weeks of life, the child is subject to over-stimulation. He is tossed and coddled and talked to. He is subjected to too great heat, light, and other intense stimuli. He is taught to walk and to gesture as though he would never learn these things of himself. He grows up among elders whose actions he is urged to imitate. Language itself, as Wundt points out, is precocious. It does not seem unreasonable to suppose that the results would be similar to those of hot-house culture of plants. In accordance with this, most investigators find that puberty is reached distinctly earlier in the city, where such conditions are at their maximum, than in the country. Along with the above, there is remarked a greater tendency to all kinds of nervous ailments. Mentally it tends to create the *blasé* type. The perpetual distraction of the attention makes for mental incoherence and therefore for imitativeness and shallowness rather than for personal resource and initiative.

The refined pleasures and love of luxury which children early become accustomed to, awaken prematurely the mania for sense satisfaction. Theatres, exciting reading, and the un-

guarded talk of elders contribute to the same effect. Sikorsky[1] emphasizes the danger of over-stimulation of mere babes. He cites the case of Preyer's boy, whose eye accommodation, on account of daily practice, developed in the unusually short space of 23 days. Sikorsky believes that even the ordinary sense impressions fatigue the child after a short time, and that strong stimuli are to be avoided at any cost. Our whole environment makes for unnatural living and nervousness. Instead of the field and hunt, we have the office, the pen, and the library. We do everything in a hurry. Trains, trolleys, telegrams—our whole civilization is on the run. Children are the worst sufferers. They have not yet become deadened to the thousand forms of stimulation. The nervous never become able to accommodate their senses. They are awakened precociously to the sensuous life. There are children's balls, children's parties and children's newspapers. In cities, especially, we no longer find real children, but small adults.

Krafft-Ebing thinks that the kind of female education that we give is worse than none. Instead of training girls to become mothers, they are trained to appear brilliant in society in order that they may marry well. To this end they are introduced into society far too early. Their general education is shallow. The heart is neglected. Without regard to whether they have musical talent, they are made nervous by premature practice on the piano.

In this connection it may be remarked that a renowned Berlin physician, from observations on 1,000 girls who began piano practice early in life, finds that 600 developed serious nervous troubles. He sets 16 years as the minimum age at which practice should begin.

Dr. C. Pelmann[2] takes a view much like that of Krafft-Ebing concerning the effect of cities, hurried life and sense stimulation upon the development of nervousness. He finds on all hands recklessness in the expenditure of energy, and of all countries he regards America as the most reckless and nervous stricken.

Dr. Willy Hellpach[3] regards our mad rush for wealth, our ways of using wealth, our art and æsthetic culture generally, and the modern sexual aberrations as only so many symptoms of a deep-seated nervousness that is ever growing worse.

Féré suggests that we have summation effects in emotions as well as in pure sensation and the simpler feelings. The hurry and bustle and continual strain, every corner of life adding its

[1] Die Seele des Kindes, p. 31.
[2] Nervosität u. Erziehung.
[3] Nervosität u. Kultur, Berlin, 1902.

mite, causes the nervous system finally to become exhausted and to drop into a state of chronic irritability.

Allowing liberally for the exaggeration and partiality of the above indictments, it is yet impossible to regard them as entirely groundless. What can be done? One thing is certain. The cry of "back to nature," so often iterated, will never be heeded. The complexity of civilized life will remain; and along with it the dangers and difficulties of bringing the children into timely *rapport* with it.

Plants and animals, for the most part, are left to a natural course of development, except when subjected to forced culture at the hands of man, or when now and then hurried by unfavorable environment to a stunted maturity. Unlike these, man is never left to a natural course of development, and in the nature of things cannot be. The plane he must reach in a few short years is so infinitely separated from his animal origin that he cannot cross the gulf by his own efforts. Even if he could, circumstances would not allow of his doing so. The child being imitative and sentient, the mere presence of others exerts a powerful influence over his rate of development; just as Mill found that suggestive action among a litter of puppies greatly hastened their progress as compared with that of the puppy kept apart. The ideal of Rousseau cannot be reached in practical life. But the conditions are certainly worse than they need to be. Infancy and childhood can at least be protected from the grosser agencies of prematuration. The strenuous life can at least be postponed till the danger of nervous breakdown is lessened. Educational practice can lay less stress upon intellect and more upon feeling and volition. And finally, life ideals can be so transformed that one may live the simple life even in the midst of the complexity of modern environment.

IX. Sexual Precocity.

No other phase of precocity is so important as that related to the premature development of the sexual functions, and no other is so difficult to treat. Many of the facts are such as cannot here be presented in detail even if lack of space did not prevent. Moreover, the establishment of norms, everywhere of vital importance in a study of precocity, offers in matters of sex, difficulties that are practically insurmountable. This paper, therefore, can do little more than emphasize a few points most of which are obvious, but which many teachers and parents are strangely ignorant of or still more strangely ignore.

1. *Cases of Extreme Sexual Precocity.*

Ploss[1] describes 42 cases of precocious menstruation vary-

[1] Das Weib, p. 239 ff.

ing from 9 years down to a few months. Carrière,[1] collects 56 such cases and describes them in so far as records could be obtained. 20 of these were under 1 year, 11 between 1 and 2 years, 11 between 2 and 3, and the rest ranging up to 8 years. 21 showed in greater or less degree the usual secondary sexual characters. Dr. J. L. Morse read a paper before the Obs. Soc. of Boston, Jan. 19, 1897, on precocious maturity which was based on the reports of about 60 such cases. Now and then, but more rarely, male children are subject to the same strange rapidity of development. Sturgis[2] cites 7 cases and describes them in full detail. All of these cases were under 5 years of age and all showed unusual development of secondary sexual characters. Dr. Townsend,[3] Mantegazza,[4] Féré,[5] Fuchs,[6] and Ausset,[7] have together cited about 12 other cases, both male and female. Several of the above reports are no doubt duplicates, so that possibly not more than 75 to 100 different cases are reliably reported. Almost nothing is known of the etiology of sexual precocity of this kind and few cases have been followed up in later life. Hydrocephaly and rickets sometimes accompany, but not often. A few are known to have lived to adult life and become parents. These cases of extreme precocity cannot be accounted for by supposing premature sexual excitation. They are plainly congenital, and the unusual acceleration can reasonably be supposed to date back as far as the very first stages of embryonic development. Precocious dentition offers similarly strange anomalies, but unlike precocious sexuality, has apparently no bodily correlates. It seems in no way related to sexual precocity. Both phenomena are interesting, but to the physician and biologist rather than the psychologist or educator.

2. *Precocious Excitation of the Sexual Instinct and its Dangers.*

Leaving out of account such abnormal sexual precocity as the above, with which environment and education have had nothing to do, emphasis must be laid upon the indubitable fact that even in normal, healthy children the sexual instincts are often aroused very early. I cannot agree with those who explain the love affairs of children as a matter of imitation or as a result of bad training. This will account for only a part. It would be an ideal state of affairs if the consciousness of sex differences and functions could be kept slumbering throughout

[1] De la Précocité Physique et Intellectuelle, Paris, 1901.
[2] Sexual Debility in Man.
[3] Boston Med. and S. J., 1897, p. 231.
[4] Hygiene der Liebe.
[5] L'instinct Sexuel.
[6] Jahrbücher f. Psychiatrie, 1903, p. 207.
[7] L'Écho Méd. du Nord., 1901, p. 293.

childhood and only allowed to waken gradually with the growing ripeness of youth. Such is the course of development which the sexual instincts take in many children. On the other hand, there are other children too numerous and too healthy to be called abnormal, whose development follows a radically different course.

I have been personally assured by a few educated, cultured, and healthy men that as children they experienced the emotions of sexual love as early as 6 to 8 years. They have further assured me that the emotion could not in their cases be accounted for by imitation or faulty training. Havelock Ellis says: "I find, on eliciting the recollection of normal persons, that in some cases there have been voluptuous sensations from casual contact with the sexual organs from a very early age, in other cases complete sexual anesthesia till puberty." One woman whom Ellis reports states that her sexual passions were stronger at 13 than at any other time in her life. Mr. Bell[1] traces the sexual emotion in a few cases as low as the middle of the third year, and finds abundant evidence of it as early as the sixth year. At the latter age, love fetishism appears. Gifts assume an acquired value. Refractory pupils become docile in the presence of the loved one, cowards are made brave and beauty serves as the attraction. "The unprejudiced mind in observing the manifestations in hundreds of cases cannot escape referring them to sex origin." Mr. Bell admits that the emotions at this early age are not usually specifically sexual in the sense of being accompanied by erethism of the sexual organs. But as Mr. Bell says, and as others have pointed out, erethism is not confined to any particular organs. Children do have the heightened vascular and nervous excitement. "They have a state of exaltation erethic in its nature, massy, vague, and distributed throughout the whole body."

Indeed, we ought not to expect anything else than that childhood should show lively premonitions of the passions more peculiar to adolescence. The body does not pass in a day from childhood to puberty and adolescence, and why should the emotions? The boy of 12 is vastly more like a man than the boy of 8, in every organ. The sexual functions have not established themselves and yet the organs have at no time been in a quiescent state as was once thought. Previously to 1887 the evolution of the sperm forming elements in man and the higher vertebrates was divided into four periods. The first two were preliminary, in the early stages of the embryo. The third embraced the latter part of fœtal life, infancy, and childhood up to puberty, and was supposed to be a period of repose.

[1] *Amer. Jour. of Psychology*, 1902, p. 325-354.

The fourth, was the period of *spermatogenèse* strictly speaking. But in 1887 M. Prenant demonstrated that the latter period was preceded by a brief phase, which he called *prespermatogenèse*. During this period the semeniferous epithelium is formed and instead of secreting sperma which live, it only forms elements which degenerate and disappear by reabsorption.[1] Moreover M. Loisel reports a careful study he himself has made of the testicles of young birds, which demonstrates that in birds, at least, no long period of repose exists. Loisel sums it up as follows: "In fact from the moment when the semeniferous epithelium is formed, there is a succession of rapid periods of development, of aborted sexual crises which normally disappear before puberty. If the evolution of the testicle of mammals is similar to that of birds, which is probable, we find here an explanation of cases of sexual precocity in man. We have only to suppose that one of these spermatogenetic crises may go farther than it normally ought to go."

Here we would seem to have, if not a complete and final, at least a tentative and partial, explanation of most cases of premature functioning of the sexual organs.

Mantegazza and Ferriani have come to the conclusion that sexual love often stirs the child even more severely than the adult. Speyer[2] is led to the same conclusion and thinks it very important with many children for careful oversight in these respects to begin quite early. The following are some children's love letters which by chance fell into his hands.

1. Letter from a boy of 9 to his sweetheart.

"Liebe Anna! Du weisst ja dass ich Dich liebe, wenn Du aber dabei bleibst mir immer nein zu sagen, breche ich Dir die Rippen entzwei. Inzwischen küsse ich Dich."

2. Girl of 12 to a married man of 22.

"Ich liebe Dich, ich bete Dich an, und will, dass Du mein seist, mein, mein, mein, mein ganz allein, mein Gatte, meine einzige Liebe; wenn Du nicht einwilligst, werde ich mich schrecklich rächen, und sollte die Welt auch daran zu Grunde gehen."

3. Boy of 13 to a 15 year old girl.

"Wenn Du mich nicht lieben willst, zerfleische ich Dir das Gesicht; nimm Dich in Acht, ich bin im Stande Dich zu töten."

4. Boy of 13 to 13 year old girl.

"Du wirst mein sein, oder ich bringe Dich um! Ich bin eifersüchtig und könnte Dich töten."

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[1] Reported by Gustave Loisel, Comptes Rendus, Vol. CXXXI, p. 725 ff.

[2] Speyer: Die Liebe bei den Kindern, Die Kinderfehler, Oct., 1903.

5. Girl of 9 to 36 year old teacher.

"Ich bete Dich an wie die Engel im Paradies Gott anbeten. Liebe mich, sonst sterbe ich vor Gram."

6. Girl of 12, of noble family, to boy of 15.

"Ach mein Gott, was muss ich leiden, wie habe ich weinen müssen, als Du gesagt hast, ich wäre eine Herumtreiberin! Warum quälst Du mich so? Siest Du denn nicht wie ich leide, wie elend ich werde? Ich schlafe nicht mehr, ich esse nicht mehr. Ach Gott! Ich fühle es, wenn Du mich nicht liebst, werde ich mir das Leben nehmen, ich thue es ganz bestimmt. Und wenn ich einst tot bin, wirst Du mir eine Rose auf mein Grab pflanzen."

7. Girl of 10 to a boy of 12.

"Du bist mein einziger Gedanke, Dich sehe ich überall, beim Spiel, bei der Arbeit, beim Essen, und mit Sehnsucht erwarte ich den Beginn der Ferien, um Dich zu umarmen und Dir zu sagen, dass ich für immer und ganz Dir angehören."

One recalls also that Byron was in love with Mary Duff at 7 years of age, Dante with Beatrice at 9 and Marie Bashkirtseff with the Duke (to whom she had never spoken) at 13. Alfieri, Rousseau, and Canova were likewise lovers in childhood.

Finally, if the feelings of sex love did not normally reach an initial stage of development in childhood, or if they were not lying in wait, as it were, ready to break forth at the least provocation, it would be difficult to account for the alarming prevalence of perverted sexual practices among children. Every scientist who has made a careful study of the subject has given evidence of the wide-spread existence of these practices, not only among children degenerate and uncared for, but also among those of sound heredity and cultured homes. The evidence is convincing that a good portion of those of perverted sexuality acquire their practices long before they have reached an age when most people regard oversight as necessary. Mantegazza finds that they often begin as early as the first attempt at speaking and walking, and he advises that every child should be carefully watched from the cradle up. Metchniakoff notes that sexual perversions are common in children under 5 years of age. Havelock Ellis finds that there is absolutely no age limit, and gives examples of its occurrence in mere babes. The studies of Rohleder, Walter Bensemann, Alfred Fournier, and Cohn have shown that this subject is one of the most burning questions of school hygiene in England, Germany and France.

These authors agree, 1st, that the extent of such practices in the public schools is terrifying; 2nd, that the worst age is from about 12 to 14, but that no school age is exempt; 3rd, that the danger of crowding young and old pupils together in

the public schools is fraught with the greatest danger. The writers on pedagogical pathology have noted the frequency with which pupils in the higher classes choose "lovers," of the same sex, in the lower classes, whom they instruct in all sorts of mutual manipulations. Fournier goes as far as to give this practice a special name, *l'inversion scolaire.* 4th, they further agree that conditions are immensely aggravated by school life, with its long hours of sitting, bodily neglect, hot stuffy rooms, bad ventilation, excitements for the imagination, unpurged classic texts, the memory grind and artificial emphasis on the acquisition of knowledge rather than right habits of feeling and acting. As Fournier puts it, the education which the youth receives in our modern society, and which has for its chief aim a rapid development of the mental powers, seems to be favorable to bad sexuality. Rohleder believes that it is those pupils whose mental powers make the greatest daily strides that are in the greatest danger.

Considering the light recently shed upon the subject of sexual inversion and the evidence of a hitherto unsuspected number of inverts, it is interesting to note that Ellis, Kraepelin, Oppenheim, Raffalovich, and Braunschweig all emphasize precocious sexual perversions as a factor in producing sexual inverts.

3. *Factors of Precocious Sexual Maturity.*

The evidence is overwhelming that man can be subjected to various conditions which will hasten or retard sexual maturity. Some of these factors are heat, light, food, climate, physical irritants; whether external like friction of clothing, or internal like tumors; sense stimulations, social surroundings, physical activity, mental training, etc. One of the most striking facts is that a large majority of investigators find puberty in both sexes earlier in the city than in the country. On account of race differences, differences in climate, and other factors, one must of course guard against unwarranted conclusions, but after liberal allowances are made, the above conclusion is unavoidable. The average age for 129 city bred girls[1] was 13.72, *i. e.*, "nearly one year younger than Playfair and Lusk give as the average age for girls." 4,872 boys and girls in St. Petersburg and vicinity showed decidedly earlier age in the city than in the country, and among the wealthy than among the poor. W. V. Zab, from observations of 4,245 Russian gymnasial students, found puberty about 1½ to 2 years earlier than among the rural population. Kakuskine gives as the average age for Russian girls in the city 14.9 and in the country 15.3. In

[1] Helen Kennedy: *Ped Sem.*, Vol. II, p. 470.

Hanover 2,129 observations showed an average age of 16.76 for the city and 17.03 for the country. Lullies[1] on 3,000 observations of Prussian girls finds puberty on the average six months earlier in the city. On this point, however, there are conflicting observations and the matter cannot yet be regarded as fully certain. Observations furnished the writer of 287 girls in two normal schools and one private school of the Middle Atlantic States give a decidedly lower average for the country than for the city. We are here, however, dealing with a selected class, among whom doubtless the evil effects of city life would be at a minimum. The difference was almost 6 months.

There is no doubt that specific sexual excitation makes for precocious puberty. Dr. Warken[2] reported observations on 42 women of the well-known Oneida community who had practiced sexual relations from an early age. The menstrual function was established in 12 of these as early as 12 years, and in one at 10. The extraordinary precocity of girls in India has been attributed to the influence of child marriages and the accompanying sexual stimulations at the premature age of 10 or 11 years. In India, according to the laws of *Manu*, a 24 year old man is suited to an 8 year old girl[3] and one of the three impurities which cannot be atoned for is for a girl to be unmarried at 18. In some districts of India it is regarded as a disgrace to allow the first menstruation to occur in the father's house, *i. e.*, before marriage.

That not only specific sexual stimulation, but even precocious interest in sexual affairs hastens the onset of puberty is testified by Féré, Friederich, Dencker, Joubert, Beneke, Acton, Scott, Carrière, Brass, Bergemann, Mantegazza, Ellis, Viasemsky, and others. Several writers have noted that precocious menstruation more often occurs with the younger daughters in a large family of girls; supposedly because their interest in the matter is heightened by their knowledge of the functions in the older sisters.

As emphasized by Mosso, Dencker, Bergemann and others, it is important that the sexes be allowed to mingle freely in school and play during childhood. It seems that those countries where the sexes are very early separated in school and otherwise give most evidence of perverted sexuality among children. The separation places an artificial emphasis on sex differences, and leaves the imagination to supply morbid ideas which would be sanified by a closer knowledge of the opposite sex gained through everyday contact.

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[1] This and the above references quoted from Pres. Hall, Adolescence, Vol. I, p. 475.

[2] Am. J. of Obstetrics, p. 785.

[3] Ploss: Das Weib, p. 385.

Among other causes of sexual precocity, Dencker mentions rich foods, stimulants like tea and coffee, premature excitement of the fancy, and over-emphasis of the intellect. Viasemsky mentions rich foods, too warm clothes, too soft a bed, high temperature, and all things that aggravate nervousness. Friederich emphasizes mental fatigue as a predisposing element. Scott mentions the theatre, impure literature, and food stimulants. Beneke lays stress on the prematuring effects of modern systems of educatiou. Brass thinks that everything which excites pleasantly tends to hasten sexual development. In harmony with this, Féré finds that a certain degree of mental and physical exaltation usually accompanies it. Acton emphasizes the effect of mechanical irritations, such as rectal irritation from worms, oversensitiveness of bladder, and irritation of the external organs from morbid secretions, slight deformities of prepuce, etc. In this connection may be mentioned the oft quoted example of Marro, of a boy who since the age of 5½ years had suffered from a tumor in the left testicle. By 9½ years he had acquired all the striking secondary sexual characters of mind and body which come with true puberty, even to the change of voice. On removal of the tumor, the voice became childish again and all the other marks of sexual maturity disappeared.

It must be acknowledged that the evidence for the importance of most of the above factors is partial and must ever remain so. The conclusive experiment of subjecting human beings to them under controlled conditions will never be made. But as man is no longer considered apart from the rest of animal creation, and even his kinship with plant life is recognized, it may be profitabe to draw some biological analogies bearing upon these same questions.

As to the effects of temperature and climate the following are a few of the observations that have been made: Animals of wide latitudinal distribution are usually largest in the centre of distribution and decrease in size both northward and southward.[1] Of butterflies which produce three generations yearly, the first two generations produced in the summer, come to quick maturity, while the last generation are retarded by the cold of winter and only complete their development on the return of spring.[2] Weismann[3] reports extensive experiments of his own and others on the effects of heat and cold on the development of butterflies. All find that in most cases the development is accelerated by one or two months. In a few cases, however, the effect was not marked. Standfuss exposed

[1] T. H. Morgan: Evolution and Adaptation, 1903.
[2] Orr: A Theory of Development and Heredity.
[3] Studies in the Theory of Descent, Vol. I.

the eggs of butterflies to a temperature of 34° C, and succeeded in producing the larval state in two-thirds the normal time, and strange to say, the larval state was also shortened although the high temperature was applied only to the eggs. Helen Dean King[1] finds that in the early stages of the development of toad's eggs, a very slight degree of heat is sufficient to cause marked acceleration. E. P. Lyons, in experimenting with artificial parthenogenesis,[2] finds that temperature is very important, and chiefly in affecting the *rate* of development. R. Malling-Hanson[3] comes to the conclusion that the variations in the increase in weight of children run parallel in the variations of the sun's warmth. Daffner also finds that warmth of climate has marked accelerating influence on human growth. In agreement with this, most anthropologists agree in ascribing an earlier puberty to southern than to northern races. The rate of growth in the ear of the rabbit has been experimentally increased by the application of high temperature, while low temperature retards its growth. De Varigny[4] finds that the growth of trees is greater in the south than on the north side. Vernon finds that temperature is an important element in the moment of fecundation of the eggs of sea urchins. A certain temperature held for only a minute at that time was equal in effect to the same temperature held during 8 days of embryonic development. Rohleder finds that nymphomania and involuntary pollutions are aggravated in the spring.

The accelerating and retarding effects of foods are also familiar to the experimental biologist. Bees regulate the birth of queens according to their possible desire for a second swarm, a third, or even a fourth; the diet being so administered that no two will be hatched simultaneously. De Varigny finds that tadpoles do not grow as large when crowded closely together in small ponds. Davenport[5] gives the same statement along with a mass of other curious and interesting information concerning the effects of phosphorus, sulphur, iodine and other food stuffs. The effects of thyroid diet are too well known to need mention. A score or more of experimenters have also been able to produce accelerations of growth both in plants and animals by applications of electricity and by various mechanical irritations. There is some evidence that summation effects begin as far back as plant life. Davenport interprets in this way the extraordinary irritating effect produced on a certain plant by placing an insignificantly small rider on one of its tendrils.

[1] Effects of Heat on Development of Toad's Eggs. Biology, Bull., 1903.
[2] Am. J. Physiology, 1903, p. 315 ff.
[3] Perioden im Gewicht der Kinder u. in der Sonnenwärme, 1886.
[4] Experimental Evolution, p. 198 ff.
[5] Experimental Morphology, Vol. II, 1899.

As to domesticity and improved breeding, Darwin and other observers since him have observed the prematuring effects. Cows, horses (especially race horses), sheep, and likewise many domestic plants are far more precocious than those in the wild state.

In the light of the above observations and many more which could be cited, it seems probable that there is at least some basis for the assertions quoted above concerning the effects of temperature, foods, clothing, crowded life, etc., in hastening sexual maturity in man. The claim is not made that the amount of sexual precocity is great if measured in years, nor that it occurs in every child. The consequence is momentous enough if the precocity exists in any degree in even a small number of individuals. It has been shown by the alienists to be often connected with adolescent insanity, and by the criminologists to be a frequent accompaniment of precocious criminality. Whether the suspected relation of cause and effect exists, or whether the one series of phenomena is only a symptom of the other, or of a more underlying pathological condition, the fact of concomitance is, in either case, important.

This, as well as every other division of our study, points to the conclusion that the prime object of our education ought to be a delaying of mental maturity. Up to 10 at least, the smallest amount of mental together with the greatest bodily occcupation should be the rule. The opposite course makes for morbidity, self-consciousness, nervousness, unbalance, religiosity and later cynicism, criminality, bad sexuality, or suicide,—all owing to the physiological and neurological concords that are present to be played upon.

The problem is largely to strengthen the volitional powers before the onset of puberty. Only a strong will can guide the human bark through the storm and stress of adolescence. In so far as the will has a basis, it is the motor apparatus. One-third to one-half of the brain surface is motor. It is reasonable that neglect of those centres may lead, as Gulick points out, to an over-functioning of the association centres. In neglect of all these things, we have lengthened the hours of school work and taken away largely the opportunity for physical development. As Gulick warns us[1] we thereby at one stroke both take away the safeguards against, and increase the danger of, sexual precocity, by heightening the sensibility of the nervous system; further, that in civilized life, generally, we have less muscular exercise and more pampered ways of living; and "just as animals in the wild state are hardy and are made slug-

[1] Safeguards for Boys. The Assoc. Outlook, 1898.

gish and precocious by domesticity, so it is with man in the biological furnace." [1]

In conclusion, the reader is urged to remember that the converse side of this question is just as important for education as is the phase here presented. The existence of nascent stages involves two dangers. Particular instruction or training may be given either too early or too late. To treat the effects of the latter will require another paper. The former has been chosen for treatment first because it is the danger that educational literature has most neglected.

This subject was proposed by President G. Stanley Hall, to whom also I am indebted beyond measure for innumerable suggestions, for the loan of rare books and most of all for his hearty sympathy and encouragement. I am indebted to the other members of the Clark University faculty, and particularly to Dr. Theodate Smith, for suggestions and for assistance in the collection of data. My thanks are likewise due to Mr. Louis N. Wilson and his library assistants for their generous co-operation.

[1] *Vide* Physical Education by Muscular Exercise, 1904.